TITLE: A FILTRATION MODEL FOR THE POLYDISPERSE CIGARETTE AEROSOL

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ABSTRACT: The model widely used for the characterization of cigarette filters is rederived to take polydispersity into account. Use is made of the constraint on the aerosol distribution before and after filtration. The results show that the interception term is not independent of velocity because of its dependence on the distribution of aerosol entering the filter. Since the cigarette rod is a filter of changing length, the distribution exiting the rod and entering the filter is itself a function of the rod length and aerosol flow rate. It is shown that the parameters for impaction and diffusion are also functions of the cigarette rod length and flow rate.

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